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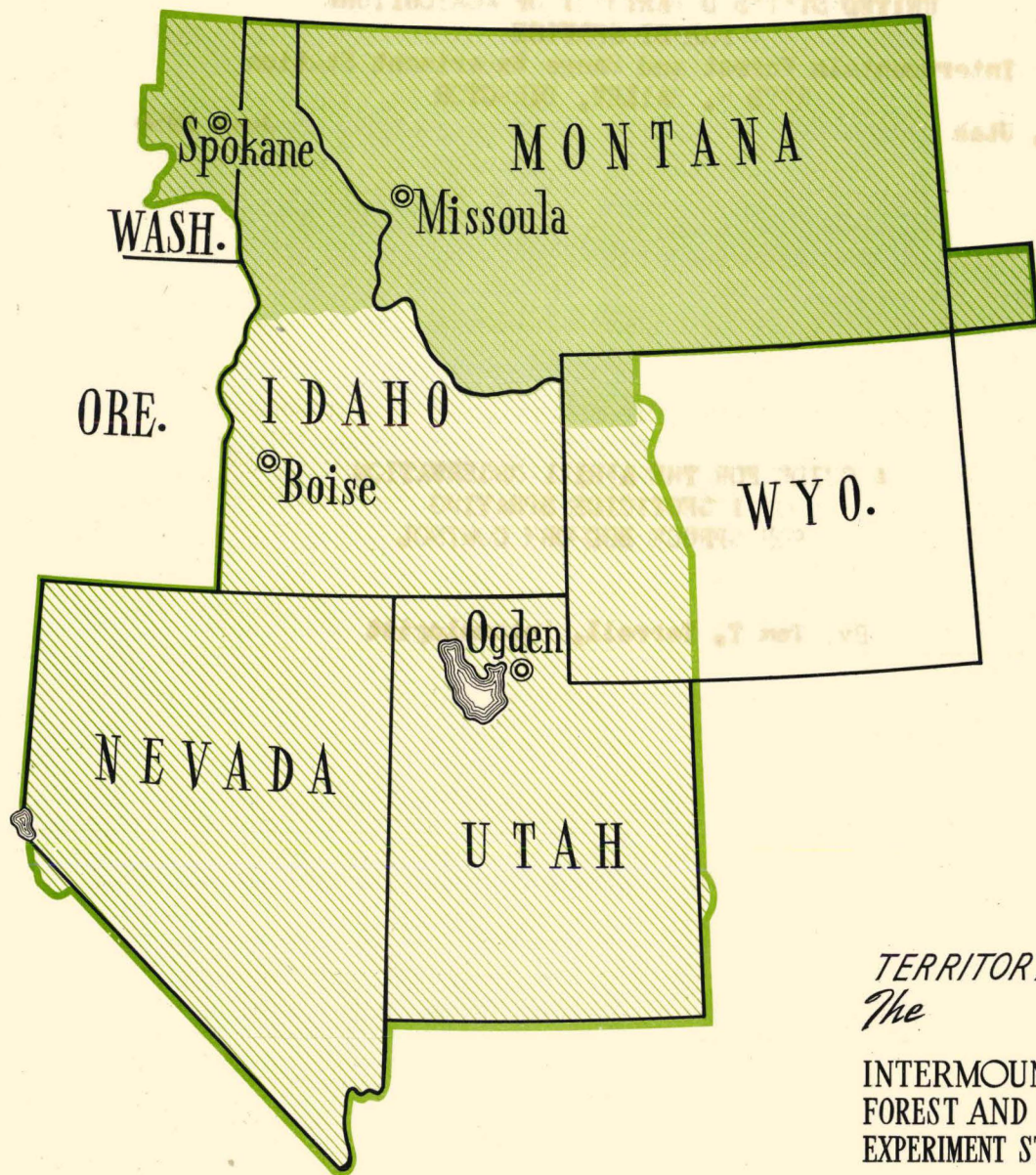
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A GUIDE FOR THE AERIAL OBSERVATION
OF INSECTICIDE SPRAYING
FOR SPRUCE BUDWORM CONTROL

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The AREA COVERED BY THIS REPORT



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The MISSOULA FOREST INSECT LABORATORY is a field unit of the Intermountain Forest and Range Experiment Station at Ogden, Utah. The Laboratory conducts forest insect research, surveys forest insect outbreaks, and gives technical advice on cooperative insect control programs in Montana, northwestern South Dakota, northwestern Wyoming, northern Idaho, and northeastern Washington. The functions are conducted in the remaining station territory by staff entomologists at Ogden, and Boise, Idaho.

A GUIDE FOR THE AERIAL OBSERVATION
OF INSECTICIDE SPRAYING
FOR SPRUCE BUDWORM CONTROL

The aerial spraying of insecticide for the control of spruce budworm infestations in the northern Rocky Mountains is most frequently done in rough terrain where markers to control the location of spray swaths cannot be used and where adequate ground observation of the operation is extremely difficult. The aerial observation of spraying operations is the most effective means of checking the compliance of spray plane pilots with recommended spraying procedures. It can also provide a constant check on the activity of each spray plane in the control units. It can be of considerable benefit to the spray plane pilots in orienting spraying, in detecting faulty nozzle equipment, and in observing the drift of the spray.

The aerial observation of spraying operations is best done with the use of small but powerful aircraft such as the Cessna 180, with trained observers, and with sufficient observation flying scheduled to permit almost constant checking of the spray planes. The observation should take place for practically the entire period of each day's spraying.

Observation planes should at all times keep well above the spray planes as a matter of safety and to allow the latter complete freedom of maneuverability. Preferably the observation plane should remain behind the spray plane and cross the spray swath frequently for effective observation.

Accurate determination of the height of flying of the spray plane is very difficult and can easily be misjudged. A rough estimate can be made by using multiples of ~~the~~ ^{free} heights as a basis of measurement. The observation plane should never fly at the same altitude as the spray plane to estimate the spray plane height.

The aerial observer should approach the job systematically and report each observation on the following points while in the air.

1. Spray plane _____ Block _____ Time _____
2. Is the swath width correct?
3. Is the spray plane at the proper height?
4. Are there leaking or plugged nozzles?
5. How is the spray going down?
6. Is the spray plane keeping the proper distance from lakes and streams?
7. Is the spray plane working in the proper block?

The attached report form or one similar is suggested.

Spray plane identity, spray block and spraying time.--This information should be obtained from the unit supervisor. The time should be that during the actual observation of spraying.

Assigned spraying area.--The observer should obtain from the unit supervisor the location of the spray block to which the observed spray plane has been assigned. The observer should be familiar with the block, particularly its boundaries, to make certain that the spray plane is operating in the assigned block or area within the block.

Swath width.--Swath width will vary with the type of spray plane. The widths should have been determined prior to the beginning of spraying by personnel charged with the responsibility of spray plane apparatus and performance checking. Swath widths should be assigned to each plane by such personnel and these widths made known to the unit supervisor and, in turn, to the aerial observer.

The observer must be able to determine the relative swath widths as seen from the air. This can be facilitated by estimating a paced distance on the ground from center to center of the swath width.

Spray nozzles.--Plugged spray nozzles are easily seen during spraying when viewed from above the spray plane because of the gap in the spray ribbon behind such nozzles. Leaking nozzles are best observed with a dark background, preferably with back lighting. These are best seen during the turns of the spray plane at the end of each swath or on ferry trips to and from the spray area.

Spray settling.--The spray ribbon behind the spray plane should settle into the trees without appreciable side drift within 5 minutes after the passage of the spray plane. Excessive side drift indicates horizontal air movement. The boiling up of the spray mist in parts of the spray ribbon indicates thermal air activity from localized vertical air movement from wind or heat. Excessive side drift or vertical boiling of the spray should not be tolerated.

Spray shut-off in restricted areas.--Spray shut-off is easily detectable. The observer should watch for evidence of delayed shut-off in passing over restricted areas or in the early resumption of spraying before such restricted areas have been passed.

Spray landmarks.--Initial spraying in a block may sometimes reflect a lack of familiarity on the part of the spray plane pilot with landmarks which can be used to tie in spraying patterns. Because of better feasibility, the aerial observer may be able to assist the spray plane pilot in the location of landmarks during this initial spray period. Spray plane pilots usually become more familiar with the landmarks after several spray trips in the same unit or area.

If spraying inconsistencies are noted by the aerial observer the air field should be notified by radio. If no radio contact can be made the observation plane must return to the field and a report is made to the unit supervisor.

AERIAL OBSERVATION REPORT
Spruce Budworm Control

1. Plane _____ Spray block _____ Time _____
2. Swath width _____
3. Spray plane height _____
4. Leaks or plugged nozzles _____
5. Spray action _____
6. Spray pattern near lakes or streams _____
7. Is the spray plane in proper block? _____

Observer _____